Statement of Basis

Title V Air Quality Operating Permit Renewal

The Bergquist Company
Brandon, South Dakota

South Dakota Department of Environment and Natural Resources

Table of Contents

Page #

1.0 Background

On May 9, 2007, the South Dakota Department of Environment and Natural Resources (DENR) issued a Title V air quality permit to The Bergquist Company (Bergquist) for a silicone rubber insulation production facility near Brandon, South Dakota. The Standard Industrial Classification code for the facility is 3679 – Electronic Components. The current Title V operating permit authorizes Bergquist to operate a solvent based manufacturing process, a mixing and coating operation and a thermal oxidizer.

On November 8, 2011, DENR received an application to renew the Title V operating permit for the Bergquist facility. Permit condition 4.2 states that if a timely and complete application for permit renewal is submitted six months prior to the date of expiration, then the existing permit shall not expire and the conditions of that permit shall remain in effect until the Secretary takes final action on the permit renewal application. DENR considered the renewal application timely and Bergquist is allowed to operate the insulation production facility under the Title V air quality permit that will expire on May 9, 2012, until DENR takes action on the renewal application.

Bergquist was recently issued a Construction permit for the installation of a new alumina heat treat system; and this system will be included in the Title V operating permit review.

No air quality complaints or violations had been filed against the facility during the term of the permit.

1.1 Operational Description

Existing Silicone Rubber Coating Operation

The existing solvent-based manufacturing process is comprised of four basic operations: milling, mixing, coating and converting. Bulk silicone rubber is milled and stored in 55-gallon drums. The drums are taken to an enclosed drum mixing station where solvent (piped into the mixing station) is dispensed into the 55-gallon drums and mixed. The volatile organic compounds (VOC) emissions from the mixing booths are vented to a thermal oxidizer, which has a destruction efficiency of at least 95%. The solvents used in this process include primarily xylene, ethylbenzene and mineral spirits. The mixed silicone dispersion (or coating) is then taken to the enclosed coater and pumped into the coater's immersion tank. The coating is then applied to a fabric substrate and cured. The VOC emissions from the enclosed coater are also vented to the thermal oxidizer. The cured material is trimmed and punched to create the final product; which is then inspected, packaged and shipped to the customer.

New Aluminum Heat Treat Process

Bergquist installed the new alumna heat treat process and commenced operation of the new process in November 2011 under Construction permit #28.3309-01-01C. In this process, raw alumina particles are treated with a liquid solvent-based solution containing one of several possible silane compounds in an enclosed powder processing chamber. Heat and agitation are

applied to the chamber for a specified period of time necessary for the silane to bond with the alumina particles. The exhaust stream is routed to the existing thermal oxidizer. In addition, the exhaust stream is filtered to remove alumina particulate matter (PM) emissions prior to entering the thermal oxidizer.

1.2 Existing Equipment

Table 1-1 provides a list of the units presently permitted; which was taken from the current Title V air quality operating permit issued May 9, 2007.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#1A	Drum Mixing Station and Coater	4,200 square feet per hour	Thermal oxidizer
	Thermal Oxidizer. The thermal oxidizer is fired on natural gas or propane.	18 million Btus per hour heat input	

1.3 Proposed Equipment

Table 1-2 lists the proposed equipment as identified in Bergquist's application.

Table 1-2 – Proposed Permitted Equipment

Unit	Description	Maximum Operating Rate	Control Device
Alumina Heat Treat System			
	Powder hopper	500 pounds of alumina per hour	Torit dust collector – emits indoors
#1B	Step 2 of heat treat process chamber		Filter cartridge routed to thermal oxidizer associated with Unit #1
	Step 3 of heat treat process chamber		Baghouse routed to thermal oxidizer associated with Unit #1
#1C	Solvent drum	15 pounds of solvent per hour	Thermal oxidizer associated with Unit #1

The powder hopper is not required to be included any further in this evaluation because the air emissions from the powder hopper are controlled by a dust collector that emits indoors.

1.4 Insignificant Activities

Table 1-3 provides a description of the insignificant activities at the Berguist facility.

Table 1-3 – Insignifcant Activities Information

Description	Maximum Operating Rate	Control Device
Space heaters	1.26 MMBtus/hour each	Not Applicable
Bulk silicone rubber milling machines	Not Applicable	Not Applicable
Two storage tanks	10,000 gallons each	Fixed Roof

Each of the space heaters has a heat input capacity less than 3.5 million Btus per hour. In accordance with the Administrative Rules of South Dakota (ARSD) 74:36:04:03(5), a device or apparatus that has a heat input capability of not more than 3,500,000 Btus per hour is exempt from obtaining an air quality operating permit. Therefore, each space heater is exempt from permitting. The Bulk silicone rubber milling machines are internally vented; therefore they are considered insignificant activities and are also exempt from permitting.

Other miscellaneous activities at the facility include two 10,000 gallon storage tanks. The potential volatile organic compound (VOC) emissions from the storage tanks are less than two tons per year. In accordance with ARSD 74:36:04:03(10), a unit that has the potential to emit two tons or less per year of any criteria pollutant before the application of control equipment is exempt from permitting. Therefore, the storage tanks are exempt from obtaining an air quality permit.

2.0 New Source Performance Standards

DENR reviewed the New Source Performance Standards (NSPS) listed in 40 CFR Part 60 to determine if any of the federal New Source Performance Standards are applicable to this facility. The following may be applicable.

2.1 40 CFR, Part 60, Subpart VVV

The provisions of the standards of performance for polymeric coating of supporting substrates facilities are applicable to the following:

1. Each coating operation and any onsite coating mix preparation equipment used to prepare coating for the polymeric coating or supporting substrates; and
2. Commences construction, modification, or reconstruction after April 30, 1987.

Bergquist operates a coating operation of a polymeric coating or supporting structure (Unit #1A) that was constructed after April 30, 1987. Therefore, this NSPS applies to the Bergquist facility. This NSPS requires Bergquist to reduce volatile organic compound emissions through the use of its thermal oxidizer by 95%.

The new alumina heat system treats the alumina. The system does not mix the alumina with other material in a mixing system. The treated alumina is added with other materials in the current mixing system (which is applicable to the subpart) to prepare a coating that may be sold

as a product or coated on to a substrate. The alumina heat treat system is not a coating operation or a coating mix preparation coating system. As such, the alumina heat treat system (Unit #1B and #1C) is not applicable to this subpart.

2.2 Standards Applicable to Storage Tanks

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and
3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

Bergquist's two storage tanks are capable of storing up to 10,000 gallons. Based on the capacity size, the two storage tanks are not applicable to any of the three subparts.

2.3 Other Applicable New Source Performance Standards

DENR reviewed the other New Source Performance Standards and determined there are no other standards applicable to Bergquist.

3.0 New Source Review

In accordance with ARSD 74:36:10:01, the new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. This facility is located in Brandon, South Dakota, which is in attainment or unclassifiable for all the criteria air pollutants regulated under the Clean Air Act. Therefore, Bergquist is not subject to new source review.

4.0 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);

2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO_2);
5. Nitrogen oxides (NOx);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

Bergquist is not one of the 28 named PSD source categories. Therefore, the major source threshold for the criteria air pollutants is 250 tons per year.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the "Tailoring Rule."

On May 13, 2010, EPA issued the final version of the "Tailoring Rule" for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and

5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

Bergquist's uncontrolled emissions of volatile organic compounds (VOC) are greater than 250 tons per year. PSD requirements state that the "potential to emit" of a stationary source is the maximum capacity of a stationary source under its physical and operational design. Any physical or operation limitation on the capacity of the source to emit a pollutant provided the limitation or its effect on emissions is enforceable shall be treated as part of its design.

4.1 Enforceable Emission Limits

Bergquist was required by New Source Performance Standard under 40 CFR Part 60, Subpart VVV to install a thermal oxidizer that achieves at a minimum 95 percent control. By taking into account this enforceable condition, Bergquist's potential to emit, considering controls, is approximately 90 tons of volatile organic compounds per year. The enforceable limit will allow Bergquist to forgo a PSD review. Bergquist will be required to have periodic reporting requirements to demonstrate compliance with the enforceable air emission limits. The periodic reporting requirements will entail reporting the actual emissions on a quarterly basis.

4.1 Potential Emissions

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

4.1.1 Emission Factors for Coater (Unit #1A)

The emission factors for the coating process (Unit #1A) are derived from Bergquist's application. The application notes that the maximum solvent loading to the coater is 335 pounds of volatile organic compounds per hour, approximately 50% of the volatile organic compounds would be Xylene, and 75% of the volatile organic compounds would be considered hazardous air pollutants.

- Volatile Organic Compounds (VOC) = 335 pounds/hour;
- Single hazardous air pollutant (Xylene) = 167.5 pounds/hour; and
- Total Hazardous Air Pollutants (HAPs) = 251.3 pounds/hour.

4.1.2 Emission Factors for Heat Treat Process Chambers (Unit #1B)

The emission factors for step 2 and step 3 process chambers are derived from Bergquist's application. The application notes the particulate matter (prior to controls) emissions would be 25 pounds per hour.

4.1.3 Emission Factors for Solvent Drum (Unit #1C)

The emission factors for the solvent drum are derived from Bergquist's application. The application notes the maximum solvent loading is 15 pounds of volatile organic compounds per hour. The application notes, the solvents would not contain any hazardous air pollutants.

4.1.4 Emission Factors for Thermal Oxidizer

The emission factors for the thermal oxidizer burning natural gas are derived from AP-42, Table 1.4.1 and Table 1.4.2, 7/98 and are shown in Table 4-1. The following emission factors, in terms of natural gas volume burned, are for units with input capacities less than 100 million Btus per hour:

Table 4-1 – Emission factors for thermal oxidizer fuel

Air Pollutant	Emission Factor
Total suspended particulate	12.0 pounds/MMcf (for LPG [1])
PM10	12.0 pounds/MMcf (for LPG [1])
PM2.5	12.0 pounds/MMcf (for LPG [1])
Sulfur dioxide	0.6 pounds/MMcf
Nitrogen oxide	100.0 pounds/MMcf
Carbon monoxide	84.0 pounds/MMcf
Volatile organic compounds	5.5 pounds/MMcf

[1] – LPG – liquefied petroleum gas

Bergquist's application also notes the un-reacted silane compound will oxidize in the thermal oxidizer to produce silicon dioxide. The silicon dioxide is considered particulate matter and needs to be reviewed as part of this review. The emission factors for the silicon dioxide formation in the thermal oxidizer are derived from Bergquist's application, which notes the silicon dioxide (particulate matter) generation through the thermal oxidizer would be 2.4 pounds per hour.

The emission factors for greenhouse gases while firing the thermal oxidizer with natural gas are from AP-42, Tables 1.4-1 and 1.4-2, July 1998 and are listed below:

1. Carbon Dioxide (CO_2) = 120,000 pounds per million cubic feet;
2. Nitrous oxide = 2.2 pounds per million cubic feet;
3. Methane = 2.3 pounds per million cubic feet.

In the case of the greenhouse gases, the emission factors for carbon dioxide, nitrous oxide and methane need to be multiplied by 1, 310, and 21, respectively, to convert the results to carbon dioxide equivalent emissions. The emission factors need to be divided by 1,020 million British thermal units per million cubic feet to derive the emission factor in units of pounds per million British thermal units. The emission factors for greenhouse gases based on carbon dioxide equivalent are listed below:

1. Carbon Dioxide (CO_2) = 117.6 pounds per million British thermal units;
2. Nitrous oxide = 0.67 pounds per million British thermal units;
3. Methane = 0.05 pounds per million British thermal units.

4.2 Emission Estimates

Potential emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming that each unit operates every hour of every day of the year.

Table 4-2 lists the annual particulate matter, PM10, PM2.5, sulfur dioxide, nitrogen oxide, volatile organic compounds, carbon monoxide and carbon dioxide equivalent (CO2e) emissions for the Bergquist facility (considering controls).

Equation 4-1 was used to estimate the potential emissions from the drum mixing room and coater (Unit #1A).

Equation 4-1 – Coating Emissions

$$Potential\ \frac{tons}{year} = emission\ factor\ \frac{pounds}{hour}\ x 8{,}760\ \frac{hours}{year} \times \frac{1}{2000}\ \frac{ton}{pounds} \times \left(\frac{100 - Control\ Effiency}{100}\right)$$

Equation 4-2 and 4-3 were used to estimate the potential emissions for the thermal oxidizer burning natural gas.

Equation 4-2 – Potential amount of natural gas consumed

$$Natural\ Gas\ \frac{MMcf}{yr} = heat\ input\ capacity\ \ \frac{MMBtus}{hr}\ x 8760\ \frac{hrs}{yr} \times \frac{1}{heat\ content}\ \frac{MMcf}{MMBtus}$$

Equation 4-3 – Potential emissions from thermal oxidizer fuel

$$Potential\ \frac{tons}{yr} = Fuel\ \frac{MMcf}{yr}\ x\ emission\ factor\ \frac{pounds}{MMcf} \times \frac{1}{2000}\ \frac{ton}{pounds}$$

The particulate matter and volatile organic compound emissions from the heat treat process chambers and solvent drum (Units #1B and #1C) were calculated using Equation 4-4. The application does not indicate any sulfur dioxide, nitrogen oxide, carbon monoxide, and carbon dioxide equivalent emissions for the alumina heat treat system. Bergquist's application notes the particulate matter control efficiency for the cartridge filter and baghouse would be 90 to 99.9%. The particulate matter control efficiency is variable depending on the particulate matter loading into the filter or baghouse system. For these calculations DENR will use a conservative particulate matter control efficiency for the cartridge filters and baghouse of 98 percent in its review. The volatile organic compound control efficiency was considered to be 95% based on the requirements of the New Source Performance Standard under Subpart VVV.

Equation 4-4 –Potential emissions from heat treat chambers and solvent drum

$$Emissions\left(\frac{tons}{year}\right) = Pollu\tan t\left(\frac{pounds}{hour}\right) x\ 8{,}760\left(\frac{hours}{year}\right) \div 2000\left(\frac{pounds}{ton}\right) x\left(\frac{100 - Control\ Effiency}{100}\right)$$

The carbon dioxide equivalent emissions for the thermal oxidizer were calculated using Equation 4-5; and noting the thermal oxidizer associated with the systems has have a maximum heat input of 18 million British thermal units (MMBtus) per hour, respectively.

Equation 4-5 – Greenhouse Gas emission calculation

$$Emissions\left(\frac{tons}{year}\right) = Heat\ Input\left(\frac{MMBtus}{hour}\right) x\ EF\left(\frac{pounds}{MMBtu}\right) x\ 8{,}760\left(\frac{hours}{year}\right) \div 2000\left(\frac{pounds}{ton}\right)$$

Table 4-2 – Potential Annual Controlled Emissions

Unit	Description	PM/PM10/PM2.5	SO_2	NO_X	VOC	CO	CO2e
#1A	**Coater**	-	-	-	73.4	-	-
	Thermal Oxidizer [1]	1.0	0.1	16.6	-	6.6	9,328.4
#1B	**Step 2 Chamber**	2.2	-	-	-	-	-
	Step 3 Chamber	2.2	-	-	-	-	-
#1C	**Solvent Drum**	-	-	-	2.2	-	-
	Thermal Oxidizer[1]	10.5	-	-	-	-	-
	Equipment leaks	-	-	-	14.7	-	-
Total Emissions		**15.9**	**0**	**17**	**90**	**7**	**9**

[1] – While controlling the volatile organic compound emissions from the coater and the solvent drum, the thermal oxidizer produces the air emissions of particulate matter, sulfur dioxide, nitrogen oxide, carbon monoxide and greenhouse gases. These air emissions are noted with Unit #1A. Besides the air emissions due to thermal oxidizer burning the volatile organic compounds and natural gas, the thermal oxidizer will also oxidize the un-reacted silane compound from the solvent drum to form additional particulate matter. These air emissions are noted with #1C.

Based on Table 4-2, Bergquist's potential to emit considering controls is less than the PSD thresholds. Therefore, Bergquist is not applicable to the PSD program. Without the use of the thermal oxidizer and the enforceable requirements of the new source performance standard Subpart VVV, Berquist would have the potential to emit volatile organic compounds greater than the PSD threshold of 250 tons per year. Bergquist is required to maintain its emission limits less than 238 tons of volatile organic compound emissions per year to allow the facility to forgo a PSD review.

5.0 National Emission Standards for Hazardous Air Pollutants

Presently, there are no finalized or promulgated National Emissions Standards for Hazardous Air Pollutants standards for the type of operations used by Bergquist at their facility.

6.0 Maximum Achievable Control Technology Standards

DENR reviewed the maximum achievable control technology standards and determined that the following may be applicable. Presently, there are no finalized/promulgated Maximum Achievable Control Technology (MACT) standards for the type of operations used by Bergquist at their facility.

6.1 Case-By-Case MACT

A Case-by-Case MACT determination must be performed for each modification or new source that does not have a finalized or promulgated MACT determination, and has the potential to emit greater than the major source threshold for hazardous air pollutants. The major source threshold is 10 tons per year of a single hazardous air pollutant and/or 25 tons per year of a combination of all hazardous air pollutants.

Bergquist proposes to use control equipment (thermal oxidizer) as required in the new source performance standard 40 CFR Part 60, Subpart VVV. Bergquist also requested an annual limitation on its hazardous air pollutant emissions. DENR will include 9.5 tons of a single hazardous air pollutant and 23.8 tons of any combination of hazardous air pollutants per 12-month rolling period. The thermal oxidizer and the annual limitation will maintain their potential to emit less than major source threshold for hazardous air pollutants. By imposing these limitations and making them enforceable, a Case-by-Case MACT determination does not apply to Bergquist.

Bergquist will be required to have periodic reporting requirements to demonstrate compliance with the enforceable air emission limits. The periodic reporting requirements will entail reporting the actual emissions on a quarterly basis.

7.0 State Requirements

Any source operating in South Dakota that meets the requirements of the Administrative Rules of South Dakota (ARSD) 74:36:05:03 is required to obtain a Title V air quality operating permit. Although Bergquist's potential controlled emissions are less than the major source threshold under the Title V air quality permit program, Bergquist must comply with federal new source performance standards and maximum achievable control technology standards is required to obtain a Title V air quality operating permit in South Dakota.

7.1 State Particulate and Sulfur Dioxide Emission Limits

Particulate and sulfur dioxide emission limits are derived from ARSD 74:36:06. Generally, DENR determines a single particulate matter and/or sulfur dioxide limit for the process system. However, the heat treat system (Unit #1B and #1C) does not automatically fall under one category or the other. The particulate matter generated from the step 2 and step 3 chamber are considered a process unit. However, the formation of silane dioxide (particulate matter) is generated during the combustion of the gases from the heat treat system in the thermal oxidizer. The thermal oxidizer, itself, is more readily considered a fuel burning unit than a process unit.

Due to how the particulate matter is formed, the process itself and the thermal oxidizer will have separate particulate matter limits.

The maximum feed rate for the heat treat system (Unit #1B) is less than 60,000 pounds per hour. Equation 7-1, derived from Administrative Rules of South Dakota 74:36:06:03(1), is used to calculate the state's total suspended particulate emission limit for process industry units with a process rate less than 60,000 pounds per hour.

Equation 7-1– State particulate emission limit

$$E_{TSP}\ \frac{lbs}{hour} = 4.10 \times P^{0.67} = 1.7\ \textit{pounds per hour}$$

Where E = rate of emission in pounds per hour and
P = process weight in tons per hour (0.2575 tons per hour).

The maximum heat input value for the thermal oxidizer is greater than 10 million British thermal units per hour. Equation 7-2, derived from ARSD 74:36:06:02(1)(b), is used to calculate the state's total suspended particulate emission limit for fuel-burning units with a heat input capacity greater than 10 million British thermal units per hour.

Equation 7-2 – State particulate emission limit

$$E_{TSP}\ \frac{lbs}{MMBtu} = 0.811 \times H^{-0.131}$$

Where H = the heat input capacity in units of millions British thermal units per hour.

In accordance with ARSD 74:36:06:02(2) the sulfur dioxide emission limit is three pounds per million Btus of heat input to a fuel-burning unit.

Equations 7-3 and 7-4 were used to calculate the potential total suspended particulate and sulfur dioxide emission rates to compare to the state's emission limits. Since the thermal oxidizer controls the emissions from all of the units, the comparison is based on the facility total noted in Table 4-2.

Equation 7-3 – Potential particulate matter and sulfur dioxide emission rate for thermal oxidizer

$$\textit{Emission Rate}_{TSPorSO2}\ \frac{pounds}{MMBtu} = \textit{Emission}\left(\frac{tons}{year}\right) x\ 2{,}000\left(\frac{pounds}{ton}\right) \div 8{,}760\left(\frac{hours}{year}\right) \div 18\left(\frac{MMBtus}{hour}\right)$$

The non-thermal oxidizer particulate matter emissions are the particulate from the step 2 and step 3 of the heat treat system chambers.

Equation 7-4 – Potential particulate matter heat treat system

$$Emission\ Rate_{TSP}\ \frac{pounds}{hour} = Emission\left(\frac{tons}{year}\right) x\ 2{,}000\left(\frac{pounds}{ton}\right) \div 8{,}760\left(\frac{hours}{year}\right)$$

Table 7-1 compares the emission rates to the state's particulate (TSP) and sulfur dioxide (SO2) emission limits.

***Table 7-1* – Potential Emission Rates versus State Emission Limits**

Unit	Pollutant	Potential Emission Rate	State Emission Limit
#1A and #1C	TSP	0.2 pounds per million Btus	0.6 pounds per million Btus
	SO_2	0.001 pounds per million Btus	3.0 pounds per million Btus
#1B	TSP	1.0 pounds per hour	1.7 pounds per hour

In accordance with 74:36:12:01, the owner or operator may not discharge into the ambient air from a single unit of emissions an air pollutant of a density equal to or greater than that designated as 20 percent opacity.

7.2 Performance Tests

Depending on the efficiency used for the cartridge filter and baghouse, Bergquist's actual emissions may be close to the state's particulate limits. Therefore, DENR recommended in Bergquist's construction permit that Bergquist conduct a particulate matter test prior to and after the thermal oxidizer. To date, this testing has not been completed.

Bergquist is required to meet emission limits under the new source performance standard for volatile organic compounds. This standard required an initial test to demonstrate compliance. Bergquist conducted this test in November 2008. Since, the volatile organic compound test is conducted prior to and after the thermal oxidizer to determine the control efficiency; and the additional particulate matter and volatile organic compound loading from the heat treat system may impact the control efficiency and temperature settings for the thermal oxidizer. Therefore, DENR recommended in Bergquist's construction permit that Bergquist conduct a volatile organic compound test prior to and after the thermal oxidizer. To date, this testing has not been completed.

DENR will include the same testing language to the renewal permit. The testing language is not intended to be additional testing. Once the heat treat system is operational and the testing is completed, the results of that testing will meet the initial testing requirements for both the construction permit and the renewed permit.

7.3 Compliance Assurance Monitoring

Compliance assurance monitoring is applicable to any unit at major sources applying for a Title V air quality operating permit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;

2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

Bergquist is required to meet the new source performance standard requirement of 95 percent reduction. This enforceable limit maintains the facility emissions to less than the major source threshold for the Title V air quality permit program. In addition, a plant wide limit of 95 tons per year of volatile organic compounds is being included. The compliance assurance monitoring program is subject to major sources receiving Title V air quality permits. Bergquist is a minor source receiving a Title V air quality. Therefore, compliance assurance monitoring is not applicable to Bergquist.

7.4 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to Title V of the federal Clean Air Act. Bergquist is required to meet particulate matter, sulfur dioxide, volatile organic compound, and hazardous air pollutant emission limits. To ensure these limits are maintained, the following periodic monitoring procedures are required.

Unit #1A is subject to periodic monitoring for particulate matter. Periodic monitoring for the units may consist of visible emission readings, pressure drop readings for the appropriate control device, temperature, or implementation of a maintenance plan for the appropriate control device. Based on experience, DENR does not require periodic monitoring for particulate matter from units that burn natural gas and/or propane. Therefore, periodic monitoring for particulate matter will not be required.

Unit #1A is subject to periodic monitoring for volatile organic compounds and/or hazardous air pollutants. Periodic monitoring will consist of establishing and recording the temperature of the thermal oxidizer and the differential pressure for the total enclosure around the drum mixing area and coater.

Unit #1A is subject to periodic monitoring for sulfur dioxide emissions. The periodic monitoring for sulfur dioxide emissions normally consists of the sulfur content of the fuel fired in the units. Periodic monitoring for sulfur dioxide is not required for units that burn natural gas and/or propane.

7.5 Air Fees

Sources subject to the Title V air quality operating permit program are subject to an annual air quality fee. The fee consists of an administrative fee and a per ton fee based on the actual tons per year of pollutant emitted. The pollutants charged for are particulate matter, sulfur dioxides, nitrogen oxides, volatile organic compounds, and hazardous air pollutants. The actual emissions are calculated by DENR based on operational information provided by the source.

8.0 Recommendation

Any source operating in South Dakota that meets one of the following is required to obtain a Title V air quality operating permit:

1. A major source for a criteria pollutant is defined as having the potential to emit greater than 100 tons per year of a criteria pollutant;
2. A major source of a hazardous air pollutant is defined as having the potential to emit greater than or equal to 10 tons per year of a single hazardous air pollutant or greater than or equal to 25 tons per year of a combination of hazardous air pollutants;
3. A source subject to federal New Source Performance Standards or national emission standards for hazardous air pollutants, unless otherwise noted in the state or federal rule; or
4. A major source of greenhouse gases is defined as having the potential to emit 100,000 tons per year.

Bergquist' potential controlled emissions of criteria air pollutants, hazardous air pollutants, and greenhouse gases are below the major source threshold for the appropriate air pollutant. However, the Bergquist is subject to a New Source Performance Standard. Therefore, Bergquist is required to obtain a Title V air quality operating permit.

Based on the above findings, Bergquist is required to operate within the requirements stipulated in the following regulations:

1. ARSD 74:36:05 – Operating Permits for Part 70 Sources;
2. ARSD 74:36:06 – Regulated Air Pollutant Emissions;
3. ARSD 74:36:07 – New Source Performance Standards;
4. ARSD 74:36:08 – National Emission Standards for Hazardous Air Pollutants;
5. ARSD 74:36:11 – Stack Performance Testing; and
6. ARSD 74:36:12 – Control of Visible Emissions.

Based on the information submitted in the air quality permit application, DENR recommends conditional approval to renew Bergquist's Title V air quality operating permit. Any questions pertaining to this permit recommendation should be directed to Marc Macy, Engineer III, at (605) 773-3151.